CLAIMS

1. A control circuit for controlling a first power supply, comprising:

an input for coupling to a temporary load; and

an output for coupling to a second power supply wherein, in response to the coupling to the temporary load for a predetermined time period, a signal is provided to control the second power supply.

2. The control circuit of claim 1 wherein the input of the control circuit is coupled to the temporary load through a feedback circuit.

3. The control circuit of claim 1 further comprising a comparator having an output coupled to generate the signal to control the second power supply, wherein:
the first power supply provides an output supply voltage;

the output of the comparator varies alternately between an on state corresponding to an increasing output supply voltage and an off state corresponding to a decreasing output supply voltage;

the on state corresponds to a first time period prior to the coupling to the temporary load;

in response to the coupling to the temporary load, the output of the comparator goes to the on state for a second time period greater than the first time period; and

in response to the output of the comparator going to the on state for the second time period, the signal is provided to the second power supply.

4. The control circuit of claim 3 wherein the predetermined time period is greater than the first time period.

5. The control circuit of claim 3 wherein the comparator is a hysteretic comparator.

6. The control circuit of claim 3 further comprising a timer circuit having an input coupled to the output of the comparator and having an output for providing the signal to control the second power supply in response to the second time period exceeding a reference time period.

7. The control circuit of claim 6 wherein the average power output of the first power supply is less than the average power output of the second power supply.

8. The control circuit of claim 6 wherein the signal is used to turn the second power supply on and off.

9. A control circuit for controlling a first power supply, comprising:

a first control input for receiving a feedback signal;

a first comparator for generating, responsive to the feedback signal, a compare signal having a first state and a second state; and

a first control output for providing a control signal to a second power supply, wherein the control signal changes state in response to the compare signal being in the first state for a time period exceeding a reference time period.

10. The control circuit of claim 9 further comprising:

a feedback circuit having an output for providing the feedback signal;

a second control input for coupling to a power circuit to receive a signal indicative of the current supplied to the power circuit, wherein an output of the power circuit is coupled to an input of the feedback circuit; and

a second control output for coupling to the power circuit to control the current supplied to the power circuit.

11. The control circuit of claim 10 further comprising:

a logic gate having a first input coupled to an output of the first comparator and having an output coupled to the second control output of the control circuit; and

a timer circuit having an input coupled to the output of the first comparator and an output coupled to the first control output of the control circuit.

12. The control circuit of claim 11 wherein:

the feedback circuit further comprises a voltage divider; and

the power circuit further comprises:

a transformer having a primary side coupled to the second control input of the control circuit and a secondary side coupled to the output of the power circuit; and

a transistor having a control electrode coupled to the second control output of the control circuit and having a current electrode coupled to the primary side of the transformer.

13. The control circuit of claim 11 further comprising:

a latch having an output coupled to a second input of the logic gate, a first input coupled to an oscillator, and a second input coupled to the second control input of the control circuit; and

a reference voltage coupled to a non-inverting input to the first comparator, wherein an inverting input to the first comparator is coupled to the first control input of the control circuit.

14. The control circuit of claim 11 wherein the timer circuit comprises:

a second comparator;

a latch having an input coupled to an output of the second comparator and having an output for providing the control signal to the second power supply; and

a resistor and capacitor coupled to a non-inverting input of the second comparator for providing the reference time period.

15. The control circuit of claim 10 wherein:

the output of the power circuit is coupled continuously to a control load;

the input of the feedback circuit is temporarily coupled to a temporary load for a predetermined time; and

the control signal is responsive to the feedback circuit being temporarily coupled to the temporary load.

16. The control circuit of claim 15 wherein the temporary load is coupled to the feedback circuit by activating a switch coupled to the temporary load, wherein the switch comprises a control input for receiving a switching signal from control circuitry in the control load.

17. The control circuit of claim 16 wherein the control circuitry in the control load comprises a microprocessor having an output coupled to provide the switching signal.

18. The control circuit of claim 9 wherein the control signal is provided to a second power supply for switching the second power supply on and off.

19. A dual power supply, comprising:

a first power supply comprising a control circuit and a power circuit, wherein the power circuit has an output for coupling to a temporary load;

a second power supply coupled to an output of the control circuit; and

wherein the control circuit generates a signal to control the second power supply in response to the coupling to the temporary load for a time period that exceeds a reference time period.

20. The dual power supply of claim 19 wherein the control circuit comprises:

a hysteretic comparator having an input coupled to the output of the power circuit; and

a timer circuit having an input coupled to an output of the hysteretic comparator, wherein an output of the timer circuit provides the signal to control the second power supply.

21. A method of operating a dual power supply, wherein the dual power supply comprises a first power supply and a second power supply, comprising:

coupling a temporary load to an output of the first power supply; and

responsive to the coupling of the temporary load for a predetermined time, providing a signal to the second power supply for switching the second power supply on and off.

22. The method of claim 21 wherein providing the signal to the second power supply comprises:

detecting the coupling of the temporary load by monitoring a time period that an output from a comparator is in a first state, wherein the comparator has an input coupled to the output of the first power supply and wherein the output of the comparator alternates between a first state and a second state; and

providing the signal to the second power supply when the time period exceeds a reference time period.

23. The method of claim 22 wherein:

prior to coupling the temporary load, the voltage of the output of the first power supply rises and falls between a first level and a second level;

prior to coupling the temporary load, the first state of the output of the comparator corresponds to an increasing voltage at the output of the first power supply and the second state of the output of the comparator corresponds to a decreasing voltage at the output of the first power supply; and

after coupling the temporary load, the first state of the output of the comparator corresponds to a decreasing voltage at the output of the first power supply.

24. The method of claim 23 wherein the signal to the second power supply is alternately latched between an on state and an off state; wherein the on state corresponds to turning on the second power supply and the off state corresponds to turning off the second power supply.

25. A method of operating a first power supply, comprising applying a temporary load to the first power supply to provide a signal for controlling a second power supply.

26. The method of claim 25 wherein the first power supply comprises a comparator and further comprising providing the signal to the second power supply responsive to an output of the comparator remaining in an on state longer than a reference time period.

27. The method of claim 26 wherein the comparator is a hysteretic comparator.

28. The method of claim 26 comprising applying the temporary load for a predetermined time period.

29. The method of claim 25 wherein the signal is provided to shut down the second power supply.

30. A control circuit for providing a control signal, the control circuit comprising a timer circuit having an input for receiving an input signal corresponding to a temporary load state and having an output for providing, in response to receiving the input signal for a predetermined time period, the control signal.

31. The control circuit of claim 30 wherein:

the input signal corresponds to a first power supply; and

the control signal corresponds to a second power supply.

32. The control circuit of claim 31 wherein the temporary load state corresponds to a temporary coupling of a load to an output of the first power supply.

33. The control circuit of claim 30 further comprising a comparator having an output coupled to the input of the timer circuit.

34. The control circuit of claim 33 wherein the output of the comparator varies alternately between an on state corresponding to an increasing output supply voltage of a first power supply and an off state corresponding to a decreasing output supply voltage of the first power supply;

the on state corresponds to a first time period prior to the receiving of the input signal;

in response to the receiving of the input signal, the output of the comparator goes to the on state for a second time period greater than the first time period; and

in response to the output of the comparator going to the on state for the second time period, the control signal is provided for turning off a second power supply.